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10/657,079	09/09/2003	David Alexander	IMMR023/03US	9176

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EXAMINER

SOTOMAYOR, JOHN

ART UNIT PAPER NUMBER

3714

DATE MAILED: 01/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/657,079

Applicant(s)

ALEXANDER ET AL.

Examiner

John L. Sotomayor

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 October 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-24, 26, 27, 30 and 31 is/are rejected.
- 7) ☒ Claim(s) 25, 28, 29, 32 and 33 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. In response to the amendment filed October 4, 2004, claims 12-33 are pending.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 12,26 and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Tsuchihashi et al (US 4,955,654).

Regarding claim 12, Tsuchihashi et al discloses an apparatus with a capture mechanism configured to engage a peripheral device (Col 3, lines 44-51), a sensing assembly configured to detect movement of the peripheral device when engaged by the capture mechanism (Fig 6, item 607), a dimension-adjusting mechanism configured to move parallel to a direction of movement of the peripheral device when engaged by the capture mechanism (Col 3, line 56 – Col 4, line12), and an actuator configured to apply force feedback to the peripheral device when engaged by the capture mechanism, the force feedback being based on control signals associated with the detected movement of the peripheral device (Col 5, lines 2-20).

Regarding claim 26, Tsuchihashi et al discloses an apparatus with a capture mechanism configured to engage a peripheral device (Col 3, lines 44-51), a sensing assembly configured to detect movement of the peripheral device when engaged by the capture mechanism (Fig 6, item 607), a dimension-adjusting mechanism configured to move parallel to a direction of movement of the peripheral device when engaged by the capture mechanism, the dimension-adjustment mechanism being configured to support the peripheral device when engaged by the capture mechanism (Col 3, line 56 – Col 4, line12), and an actuator configured to apply force feedback to the peripheral device when engaged by the capture mechanism, the force feedback being based on control signals associated with the detected movement of the peripheral device (Col 5, lines 2-20).

Regarding claim 30, Tsuchihashi et al discloses a method engaging a capture mechanism configured to engage a peripheral device (Col 3, lines 44-51), a sensing assembly detecting movement of the peripheral device when engaged by the capture mechanism (Fig 6, item 607), adjusting a dimension of a coupling mechanism in response to a movement of the peripheral device when engaged by the capture mechanism the dimension-adjustment mechanism being configured to support the peripheral device when engaged by the capture mechanism (Col 3, line 56 – Col 4, line12), and an actuator applying force feedback to the peripheral device when engaged by the capture mechanism, the force feedback being based on control signals associated with the detected movement of the peripheral device (Col 5, lines 2-20).

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
4. Claims 13,14,19,27 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuchihashi et al in view of Rosenberg et al (US 5,805,140).

Regarding claim 13, Tsuchihashi et al discloses an apparatus and method for a dimension-adjusting mechanism to capture and adjust automatically when manipulating a peripheral device. Tsuchihashi et al does not specifically disclose that the apparatus is configured to adjust in response to a movement of a peripheral device. Rosenberg et al teaches an apparatus wherein the dimension-adjustment mechanism is configured to automatically adjust dimensions of a coupling mechanism in response to a movement of the peripheral device, the coupling mechanism being configured to couple the peripheral device when engaged by the capture mechanism to the sensor assembly (Col 6, lines 25-34). Therefore, it would have been obvious to one of ordinary skill in the art to provide an apparatus and method for a dimension-

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adjusting mechanism to capture and adjust automatically when manipulating a peripheral device as disclosed by Tsuchihashi et al where the dimension-adjustment mechanism is configured to automatically adjust dimensions of a coupling mechanism in response to a movement of the peripheral device as taught by Rosenberg et al for the purposes of providing a completely automated system for peripheral manipulation.

Regarding claims 14, 27 and 31, Tsuchihashi et al discloses an apparatus and method for a dimension-adjusting mechanism to capture and adjust automatically when manipulating a peripheral device. Tsuchihashi et al does not specifically disclose that the apparatus includes an outer tubular-member and an inner-tubular member at least partially disposed within the outer-tubular member for adjusting the capture mechanism and the inner tubular-member being coupled to the sensing assembly at a distal end of the inner tubular-member. Rosenberg et al teaches an apparatus with a dimension-adjusting capture mechanism including an outer tubular-member and an inner-tubular member at least partially disposed within the outer-tubular member for adjusting the capture mechanism and the inner tubular-member being coupled to the sensing assembly at a distal end of the inner tubular-member (Fig 6). Therefore, it would have been obvious to one of ordinary skill in the art to provide an apparatus and method for a dimension-adjusting mechanism to capture and adjust automatically when manipulating a peripheral device as disclosed by Tsuchihashi et al with a dimension-adjusting capture mechanism including an outer tubular-member and an inner-tubular member at least partially disposed within the outer-tubular member for adjusting the capture mechanism and the inner tubular-member being coupled to the sensing assembly at a distal end of the inner tubular-member as taught by

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Rosenberg et al for the purposes of extending the reach of the existing apparatus when coupling to a peripheral device.

Regarding claim 19, Tsuchihashi et al discloses an apparatus and method for a dimension-adjusting mechanism to capture and adjust automatically when manipulating a peripheral device. Tsuchihashi et al does not specifically disclose adjusting the coupling mechanism in response to a movement of the peripheral device when engaged by the capture mechanism. However, Rosenberg et al teaches a method for applying force feedback to the peripheral device when engaged by the capture mechanism, the force feedback being based on control signals associated with the detected movement of the peripheral device (Col 5, lines 20-41). Therefore, it would have been obvious to one of ordinary skill in the art to provide an apparatus and method for a dimension-adjusting mechanism to capture and adjust automatically when manipulating a peripheral device as disclosed by Tsuchihashi et al and adjusting the coupling mechanism in response to a movement of the peripheral device when engaged by the capture mechanism as taught by Rosenberg et al for the purposes of improving the automation of the system for use in various environments.

5. Claims 15-18 and 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuchihashi et al in view of Rosenberg et al in further view of Bailey (US 6,062,865).

Regarding claims 15-18, Tsuchihashi et al/Rosenberg et al does not specifically disclose an apparatus comprising a first and second pulley, a belt disposed about the first and the second pulley, a trolley configured to move along a guide rail in response to a corresponding movement of the peripheral device when engaged by the capture mechanism (claims 15-18), a rotation-motion sensor to measure rotation of the peripheral device and a translational-motion device to

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measure translational-motion when engaged by the capture mechanism (claims 16-18), the translational-motion sensor being coupled to the first pulley (claim 17), or an actuator coupled to a second pulley with the actuator being configured to apply force-feedback by controlling a rotation of the second pulley (claim 18). However, Bailey teaches an apparatus comprising a first and second pulley, a belt disposed about the first and the second pulley, a trolley configured to move along a guide rail in response to a corresponding movement of the peripheral device when engaged by the capture mechanism (Fig 2), a rotation-motion sensor to measure rotation of the peripheral device and a translational-motion device to measure translational-motion when engaged by the capture mechanism (Fig 2), the translational-motion sensor being coupled to the first pulley (Fig 3), or an actuator coupled to a second pulley with the actuator being configured to apply force-feedback by controlling a rotation of the second pulley (Figs 2 and 3). Therefore, it would have been obvious to one of ordinary skill in the art to provide an apparatus with a capture mechanism configured to engage a peripheral device with a sensing assembly configured to detect movement of the peripheral device when engaged by the capture mechanism as disclosed by Tsushihashi et al/Rosenberg et al with a first and second pulley, a belt disposed about the first and the second pulley, a trolley configured to move along a guide rail in response to a corresponding movement of the peripheral device when engaged by the capture mechanism, a rotation-motion sensor to measure rotation of the peripheral device and a translational-motion device to measure translational-motion when engaged by the capture mechanism, the translational-motion sensor being coupled to the first pulley, or an actuator coupled to a second pulley with the actuator being configured to apply force-feedback by controlling a rotation of the

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second pulley for the purposes of providing a training simulator with all elements of actual operating conditions without requiring a live patient.

Regarding claim 20, Rosenberg et al discloses a method for sensing and using force-feedback in a medical training device comprising sensing a rotational-motion of a peripheral device and sensing a translation-motion of a peripheral device (Fig 3).

Regarding claim 21, Tsushihashi et al/Rosenberg et al discloses a method for sensing and using force-feedback in a medical training device comprising sensing a rotational-motion of a peripheral device and sensing a translation-motion of a peripheral device. Tsushihashi et al/Rosenberg et al does not specifically disclose that the method includes sensing the motion of a trolley that is coupled to a peripheral device. However, Bailey teaches sensing the motion of a trolley coupled to a peripheral device (Fig 2). Therefore, it would have been obvious to one of ordinary skill in the art to provide a method for sensing and using force-feedback in a medical training device comprising sensing a rotational-motion of a peripheral device and sensing a translation-motion of a peripheral device as disclosed by Tsushihashi et al/Rosenberg et al with a means for sensing the motion of a trolley coupled to a peripheral device as taught by Bailey for the purposes of providing uniform feedback to a user of the system.

Regarding claim 22, Tsushihashi et al/Rosenberg et al discloses a method for sensing and using force-feedback in a medical training device. Tsushihashi et al/Rosenberg et al does not specifically disclose applying force-feedback to a peripheral device by controlling a rotation of a pulley. However, Bailey teaches a method for applying force-feedback to a peripheral device by controlling the rotation of a pulley (Fig 3). Therefore, it would have been obvious to one of ordinary skill in the art to provide a method for sensing and using force-feedback in a medical

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training device as disclosed by Tsushihashi et al/Rosenberg et al with means for applying force-feedback to a peripheral device by controlling the rotation of a pulley as taught by Bailey for the purposes of increased accuracy in the application of force when operating the training device.

Regarding claim 23, Tsushihashi et al discloses a method wherein adjusting a dimension of the capture mechanism includes increasing a cross-section of the capture mechanism such that the peripheral device may be removed from the capture mechanism (Fig 4).

Regarding claim 24, Tsushihashi et al/Rosenberg et al discloses a medical simulation device with a method for a coupling mechanism to engage a peripheral device. Tsushihashi et al/Rosenberg et al does not specifically disclose moving an inner tubular-member relative to an outer tubular-member in response to the movement of a peripheral device when engaged by the capture mechanism. However, Bailey teaches a method for moving an inner tubular-member relative to an outer tubular-member in response to the movement of a peripheral device when engaged by the capture mechanism (Col 5, lines 33-47 and Figs 2 and 3). Therefore, it would have been obvious to one of ordinary skill in the art to provide a medical simulation device with a method for a coupling mechanism to engage a peripheral device as disclosed by Tsushihashi et al/Rosenberg et al with means for moving an inner tubular-member relative to an outer tubular-member in response to the movement of a peripheral device when engaged by the capture mechanism as taught by Bailey for the purposes of translating movement requests through the capture mechanism and receiving force-feedback in return to properly simulate the use of peripheral devices during a surgical procedure.

Allowable Subject Matter

Claims 25,28,29,32 and 33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art does not teach or suggest a medical simulation device and method in which a bellows having a plurality of leaves is configured to support a peripheral device and used to assist in the stabilization of said peripheral device during movement of the peripheral device.

Response to Arguments

Applicant's arguments with respect to claims 12-33 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

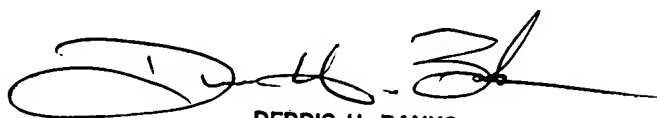
Any inquiry concerning this communication or earlier communications from the examiner should be directed to John L Sotomayor whose telephone number is 571-272-4456.

The examiner can normally be reached on 6:30-4:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Derris Banks can be reached on 571-272-4419. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jls
January 10, 2005



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